

READY-2-GO MICROGLIA PHAGOCYTOSIS ASSAY SERVICES

BACKGROUND

Microglia perform a variety of functions essential to establishing and maintaining neuronal health. These cells survey and secrete inflammatory molecules, prune synapses, and are responsible for clearing pathogens, dead cells, and pathological proteins from the extracellular space through phagocytosis. As such, these cells are strongly implicated in the onset or progression of neurodegenerative diseases.

In Alzheimer's disease (AD), it is hypothesized that M2-like microglia may be beneficial, providing surveillance and phagocytosis of extracellular amyloid and supporting the regeneration and repair of neurons. However, chronic activation may be detrimental; M1-like microglia secrete factors that can damage neurons.

The balance between healthy and disease states are influenced by microglial activities. The modulation of this activity is a potentially powerful strategy to developing therapeutics for neurodegenerative diseases.

THE CHALLENGE

To date, assays developed for microglial research have most commonly been conducted using immortalized and murine cell lines, and results from these experiments may not faithfully mirror human biology.

The complex biology and nuanced behavior of microglia, especially in the context of neurodegenerative disease, are still largely unknown, and shortcomings of these models that use microglial substitutes cannot be identified until late in the drug-development process.

However, primary, human microglia are expensive and difficult to access, especially in adequate quantity to screen candidate therapeutics. Challenging culture conditions and patient-to-patient variability further emphasize the need for a reliable, robust, biologically relevant *in vitro* system.

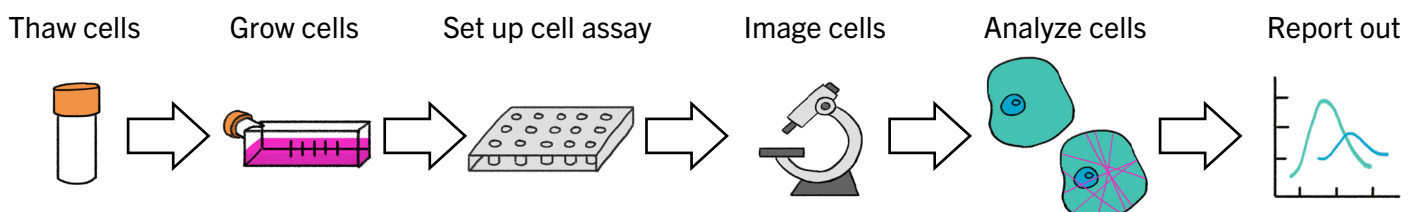
OUR SOLUTION

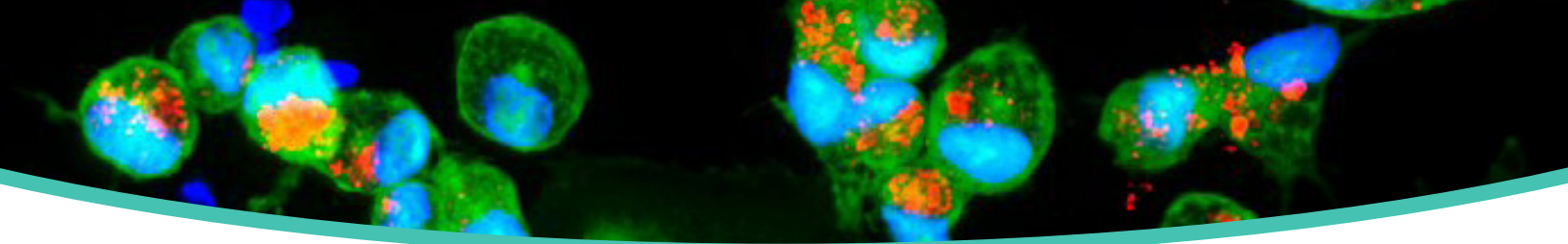
Our Ready-2-Go (R2G) Microglia Phagocytosis Assay Service measures the uptake of a fluorescent substrate by iPSC-derived human microglia. iPSC-derived cells afford reproducible, higher-throughput assays. This assay measures the phagocytosis of bioparticles in real-time through live-cell imaging. Reference compounds that activate and inhibit phagocytosis in this system are run in parallel with your test articles.

KEY FEATURES & BENEFITS

- **Physiologically relevant cell models.** Wild-type and TREM2-mutant, human iPSC-derived microglia.
- **Greater assurance of data quality.** Optimized cultures with reference compounds enhance assay reproducibility and minimize noise.

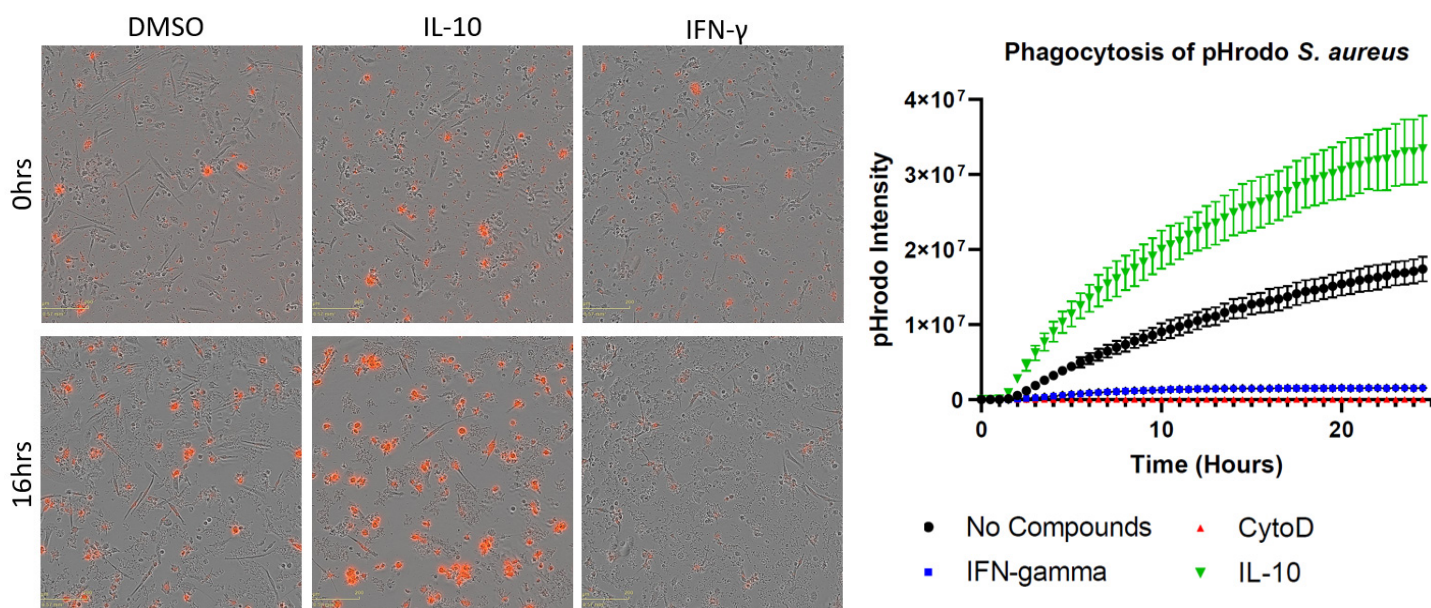
PROCESS OVERVIEW





HOW IT WORKS

Cells are seeded into 384-well plates. Reference compounds are incubated with the cells overnight, followed by the addition of pHrodo *S. aureus* bioparticles that fluoresce when phagocytosed into a cell. Fluorescent measurements of the pHrodo intensity and images are taken every 30 minutes for 24 hours. The images and graph below show the phagocytosis of pHrodo bioparticles by wild-type human iPSC-derived microglia treated with reference compounds.



ASSAY SERVICE DETAILS

	Ready-2-Go Microglia Phagocytosis	Bespoke Assay Services
Cell Type	iCell Microglia (Fujifilm Cellular Dynamics, Inc.): Normal, TREM2 HO, or TREM2 HZ	If you would like to expand the service offering beyond R2G shown on left, please contact us at info@phenovista.com or reach out to your local sales representative.
Markers	pHrodo bacteria bioparticle, Hoechst (nuclei)	
Dosing	6 doses of your test article	
Positive Control*	IL-10	
Negative Controls*	Cytochalasin D, IFN-gamma	
Time Points	Every 30 min. over 24 hours	
Assay Readouts	pHrodo intensity over time	

* Vehicle and untreated controls also included.

